# SUSTAINABLE AND HEALTHY COMMUNITIES RESEARCH PROGRAM

SHC Research Program goals are to accelerate the pace of contaminated site cleanups, return contaminated sites to beneficial use in their communities, protect vulnerable groups, especially children, revitalize the most vulnerable communities, and understand the connections between healthy ecosystems, healthy people, and healthy communities.

FY19-22 Planning
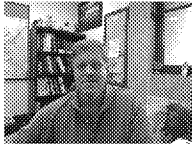## Research Area Introduction

Feb. 28, 2019
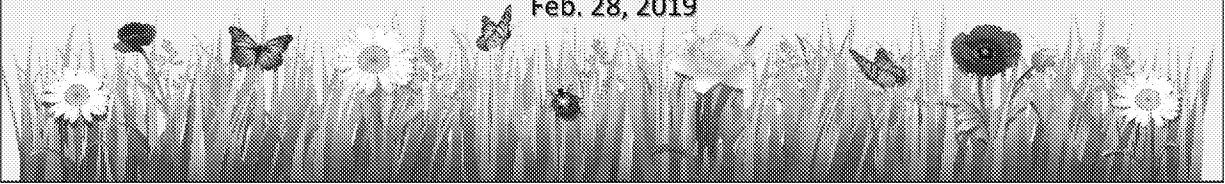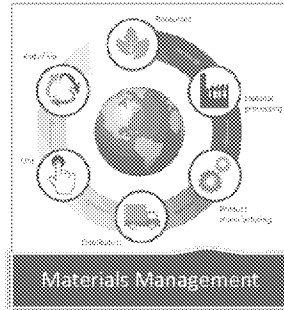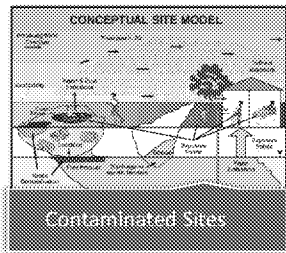
Presentation Outline and Goals

- Meet the SHC Research Area Coordinators (RACs)!
- Review of SHC Research Areas by the RACs
- Timeline and next steps for moving forward on planning
- Questions?

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Meet the SHC Research Area Coordinators (RACs)

Thomas Holdsworth, NRMRL
Research Area 1: Technical Assistance;
Research Area 2: Site Characterization
and Remediation;
Research Area 6: Landfill Management

Dennis Timberlake, NRMRL
Research Area 4: Leaking Underground
Storage Tanks
Research Area 8: Waste Recovery and
Beneficial Use

Susan Julius, NCEA
Research Area 10: Community-Driven Solutions
Research Area 11: Measuring Outcomes

Jennifer Cashdollar, NERL
Research Area 3 (Vapor Intrusion) and
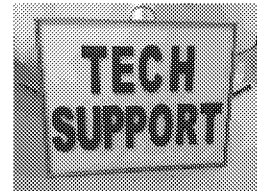Research Area 5 (Chemicals of Immediate
Concern)

Marc Russell, NHEERL
Research Area 9: Community Benefits from
Remediation, Restoration, and Revitalization

Douglas Young, NRMRL
Research Area 7: Life Cycle Inventories
and Methodologies

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Research Area 1: Technical Support

Description:

- Superfund Technical Support:
  - Provides technical support and assistance to regional staff;
  - Improves communication among regions and ORD;
  - Ensures coordination and consistency in the application of remedial technologies;
  - Furnish workshops and state-of-the-science information to RPMs and OSCs.
- ETSC provides assistance with contaminated site management at any phase.
- GWTSC provides assistance with groundwater remediation solutions at any phase.

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Research Area 2:
Site Characterization and Remediation
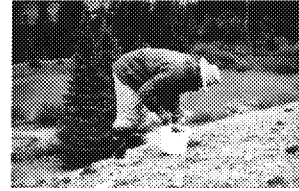
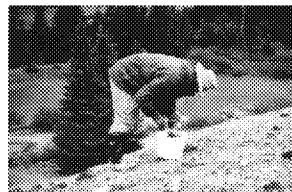This Photo by Unknown Author is licensed under CC BY-ND

Description:

- This research area provides state-of-the-science methods, models, tools, and technologies that OLEM, Regions and States use in programmatic guidance, and that decision makers use in the site cleanup process.

  - Soils and Sediments Research
  - Groundwater Research
 - Mine Waste Research

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Research Area 2:
Site Characterization and Remediation

- Three research themes around soils and sediments, groundwater, and mining.
  - Soils and Sediments theme includes potential products for the treatment of superfund soils and sediments using passive sampling; understanding metals sequestration; developing assessment tools; filling data gaps for chemicals of concerns.
  - Groundwater theme will focus on characterization of heterogeneous contaminant sites and advance the practice of groundwater remediation.
  - Mining theme will advance passive treatment technologies for mining-influenced waters, research control of mine waste sources to reduce or eliminate contamination routes, and reduce metal contamination and exposure at former mining, smelter and community sites.

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Research Area 3:
Vapor Intrusion
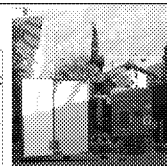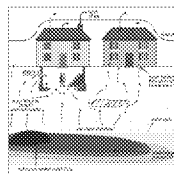
Vapor intrusion (VI) is the migration of vapor-forming chemicals from a subsurface source into an overlying building or structure via any opening or conduit. This research area will focus on three main problems related to VI:

- Vapor intrusion in large multi-compartment buildings
  - Conduct field-based studies to evaluate VI in a large building, and the effects of weather and building-related parameters, and surrogate measures for understanding when/if VI will occur.
- Subslab sampling methods for VI
  - Conduct field testing and monitoring of subslab methods in order to produce data and guidance that will help inform the temporal variability beneath a building.
- VI temporal and spatial variability
  - Measure and model spatial and temporal variability in VI through common pathways in homes and buildings, with concurrent chemical indoor air samples, indicator, tracer, and surrogate measurements.

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Research Area 4: Leaking Underground Storage Tanks

Description:

- Evaluate Groundwater Vulnerability
  - Develop tools to assist the states and the EPA regional offices in identifying vulnerabilities to groundwater from leaking UST sites.

- Evaluate New Remediation Methodologies and Leak Prevention
  - Assist OUST, EPA regional offices, and states in assessing developments in technologies for site cleanup.
  - Update technical guidance with new information and recent technology advances.
  - Develop approaches to assist the states in assessing alternative and emerging fuels for compatibility with existing UST system components to prevent releases.

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Research Area 5: Chemicals of Immediate Concern
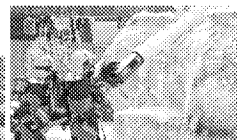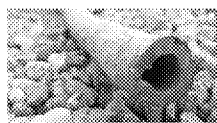
SHC's research on lead and PFAS will help to inform numerous cross-EPA, cross-federal agency, and regional and state concerns regarding these two contaminants. This research area will focus on the following:

- Lead—High risk communities and sources of exposure
  - Improve the estimates of national- and local-scale estimates of children's blood levels.
- Lead—Exposure factors and exposure models
  - Methods and data on the key drivers of blood lead levels in children.
- PFAS—Environmental characterization
  - Sampling, analysis and remediation of PFAS from contaminated soils and sediments, groundwater, landfills, leachate, industrial facilities, and air.
- PFAS—Sources, fate and transport, remediation, and materials management
  - Characterization of chemical transformation and mobility, managing end-of-life disposal for consumer and industrial solid waste.
- PFAS—Exposure
  - Multi-media PFAS exposure estimates for risk management and identification of locations of high potential exposure

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Research Area 6: Landfill Management

Description:

- Provide an integrated approach for researching waste management regarding landfill risk and performance and its impact on human health and the environment.
  - Research post-closure care at RCRA Subtitle D landfills approaching the end of the 30 year closure period.
  - Analyze groundwater data around Subtitle C landfills
  - Better understand the variables that influence the effectiveness of contaminant systems and moisture addition to improve municipal landfill performance
  - Better understand the impact of elevated temperatures in landfills that potentially threaten the functionality of containment systems and develop landfill best practices.

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Research Area 7: Life Cycle Inventories and Methodologies
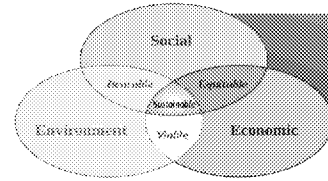
Description:

- Continue to champion sustainable materials management approaches through the development of the United States Environmentally-Extended Input-Output (USEEIO) model and enhance measurement methods used for waste tracking.
  - Assist the states and regions to adequately address resource conservation in solid waste management through application of the USEEIO model. Build upon the Georgia pilot project using an open and transparent framework in areas of the country outside Region 4. The methods demonstrated will assist states with an understanding of where and how materials are consumed in society and identify opportunities for resource conservation.
  - ORD will collaborate with ORCR to develop methods to measure generation of all types of waste, how various waste streams are managed, and the fate of the materials generated.

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Research Area 8: Waste Recovery and Beneficial Use of Materials
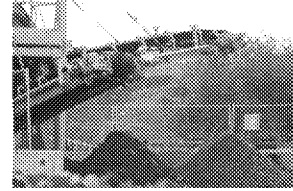
Description:

- Inventories, Evaluation, and Mass Balances
  - Develop tools and methods to advance the reuse of materials.
  - Develop methods to improve sorting of construction and demolition materials for reuse.
- Treatment Effectiveness of in-situ Stabilization of Contaminants
  - Refinement and development of leaching tests to provide leaching estimates across a variety of environmental conditions and chemicals.
- Beneficial Use of Waste Materials for Site Remediation
  - Evaluate, develop, test and demonstrate technologies that beneficially reuse many types of waste such as industrial-use solvents and infrastructure waste.

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Research Area (RA) 9: Community Benefits from Remediation, Restoration, and Revitalization
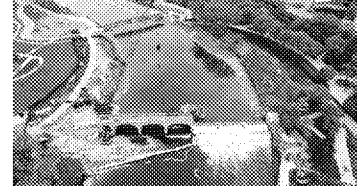
Description:

- Develops methods and metrics to characterize and forecast the potential benefits from remediation and restoration that improve ecological and human health and well-being.

- Builds on the research in Topic 1 by using the Remediation to Restoration to Revitalization (R2R2R) framework developed by GLNPO to link site-specific environmental improvements to community revitalization after natural disasters and contaminant cleanup and restoration efforts.

- It examines the impacts of community revitalization goals and priorities (e.g., desired site uses, benefits derived from nature) in the design stages of remediation and restoration efforts and provides methods and tools for community decision making, looking forward to the potential impacts of future environmental hazards such as extreme weather events.

- This research area completes the connections from site-specific remediation and restoration efforts to adjacent and nearby communities impacted by contamination or other disasters that render areas unusable.

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Research Area (RA) 9:
Community Benefits from Remediation, Restoration, and Revitalization

Evaluation of Restoration Effectiveness

- Output (OP) 1. Methods and Metrics for Evaluating Restoration Effectiveness
    - Work with GLNPO and other partners to refine existing or develop new approaches that can be used to assess remediation and restoration outcomes and the effectiveness of the projects.

Linking Remediation and Restoration to Revitalization

- OP2. Forecasting Ecosystem Services and Benefits to Human Health and Well-being
    - Report on collaborative case study applications of ecosystem services and their benefits to human health and well-being to support community decision making.
- OP3. Evaluating the Contribution of Site Remediation and Restoration to Community Revitalization and Health Promotion
    - Provide evidence on whether changes in environmental and ecological condition lead to changes in human health and well-being, including community revitalization.
- OP4. Measuring the Effects of Remediation/Restoration on Community Revitalization
    - Evaluate, develop, validate, and demonstrate methods and metrics to assess longer-term ecological and health benefits of remediation and restoration projects.

Translating ORD Tools for Brownfield Communities

- OP5. Case Studies to Apply and Analyze Use of Tools at Brownfield Sites
    - Select relevant tools and assess their applicability across different project types, timeframes, and community.

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Research Area 10: Community-Driven Solutions
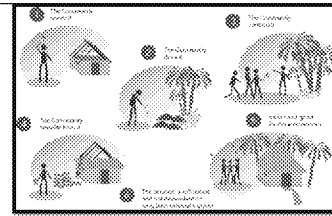
Description:

- Characterize Place: Identify Community Assets and Vulnerabilities
  - Support development and implementation of resilience or recovery plans by characterizing determinants of local health risks and assessing health disparities and factors affecting community resilience
- Characterize Relationships Between Exposures and Vulnerabilities and Associated Health Outcomes from Multiple and Cumulative Stressors
  - Quantify cumulative impacts of chemical exposure, lifestage vulnerability, and stressors from the built and degraded natural environments on existing background burdens of poor general health, high rates of disease, and poor mental health
- Integrate Decision Support Tools and Processes to Support Community-Driven Problem Solving
  - Develop or apply EPA decision support tools and approaches that enable seamless incorporation of scientific evidence into community-driven problem-solving approaches
- Decision Making to Improve Resiliency:
  - Identify expected impacts from natural or manmade perturbations and apply methods to integrate that information into effective, cost-efficient plans and actions for resilience, adaption, and risk reduction

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Research Area 10: Community-Driven Solutions
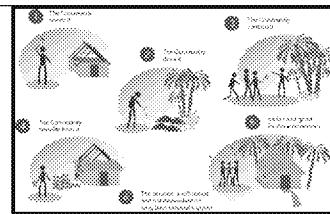
Outputs:

- Data and Approaches for Identifying and Mapping Assets and Vulnerabilities
- Characterize Select Interrelationships Between Chemical and Non-Chemical Stressors
- Cumulative Impacts of Environmental Burdens
- Pathways to Revitalization and Resilience that Build Community Capacity
- Potential Impacts and Outcomes from Changing Conditions
- Guidance for Effective Resiliency Action

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Research Area 11: Measuring Outcomes
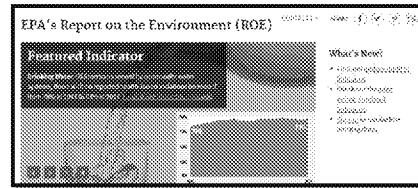
Description and Outputs:

- Nationwide Indicators: Update and integrate ROE indicator data with other Agency resources and databases to facilitate the interpretation and communication of cross-cutting indicators
  - Output: Management Plan for ROE Indicators and Website
  - Output: New Nationwide Indicators
- Interpret Indicator Trends: evaluate changes in environmental conditions and impacts of environmental actions through improved understanding of underlying causal factors for observed indicator trends
  - Output: ROE Strategic Blueprint
  - Output: Identify Trends Amenable to Interpretation
- Forecast Indicator Trends: Develop forecasts and measures of uncertainty about likely trajectories for issues of national importance to support strategic planning and prioritization
  - Output: Projections of ROE Indicators

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Strategic Research Action Plan (StRAP)

Action	Action Owner	New Date
RA Coordinators Selected	NPD & LC	Completed
RA Teams Formed	NPD: Engages Program/Reg reps LC: Selects ORD staff	Mar 1
Initial allocation of resource targets at the RA level	NPD (in consultation with MIs)	Mar 1
First meeting of RA Teams to set path forward	RA Coordinator	NLT mid Mar
Evaluation and revision of Output descriptions	RA Coordinator/RA Team/NPD	Mar 29
Finalization of Output leads	RA Coordinator/LC	NLT Mar 29
Initial draft of Products	RA Coordinator/RA Team/LC	May 10
Review of proposed Products by LCs and NPDs	LC & NPD	May 24
Draft final products	RA Coordinator/RA Team	June 21
Funding allocation by RA and LCO funding needs finalized (with OPARM) for FY20	NPD/OPARM	June 28
Review of final RA template by NPD, LCs, IOAA	NPD & LC	NLT July 26
Final RA Descriptions finalized and in RAPID	RA Coordinator	Sep 13

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Next Steps

- Output lead selection – by L/C
  - By March 29th 2019
  - Let L/C know if you are interested
- Drafting of products – with Clients
  - Mid. March – May 2019
  - *Important questions to keep in mind with products:*
    - *Is the proposed product contributing to the output?*
    - *Who will use the product?*
    - *How will they use it?*
    - *Bottom line: products should specifically address a client need!*
- Research area descriptions - RACT
  - Template to be completed by the RACTs by September 2019
- QUESTIONS?
  - Tom Holdsworth (Holdsworth.thomas@epa.gov)
  - Doug Young (Young.douglas@epa.gov)
  - Dennis Timberlake (Timberlake.dennis@epa.gov)
  - Jennifer Cashdollar (Cashdollar.Jennifer@epa.gov)
  - Marc Russell(Russell.marc@epa.gov)
  - Susan Julius (Julius.Susan@epa.gov)

Research Area Template   *final – December 201...*

National Research Program: *name*
Topic: *StRAP Topic*
Research Area: *StRAP Research Area*
Research Area Coordinator (MI): *NAI name, LCO and Division affiliation, NPDship*
Research Area Team Members: *NPD, LCO, Comros; name and affiliation*
Research Area Team Members (non-ORD): *name; program, region, and/or state affiliation, division, telephone #*
Research Area Start Date: *MM-YYYY*
Research Area End Date: *MM-YYYY*

Overview (no more than 3 sentences)
Provide a brief introduction that describes the research area and the environmental problem the research will address. The abbreviated text should be associated with the RA description in the body of the StRAP.

Program/Regional/State Needs (or logically grouped set of needs) (no more than ½ page)
Clearly state the specific problem(s) to be addressed, focusing the scope of the research area onto research/outputs necessary to address identified program, regional, and/or state needs. Identify key statutes and/or regulatory issues that the research will support. Identify relevant research results from the previous StRAP or other research partners, and how this research will build from those results (if applicable). State how this research will be applied by EPA programs/regions, states, tribes, and/or other partners to improve human health and the environment.

Assumptions and Constraints (no more than ¼ page)
Identify key assumptions or constraints that could impact completion of the proposed research Products and Outputs, including: unique capabilities, dependencies, regulatory, statutory, judicial (e.g., consent decree limitations), and others (e.g., logistical).

Output 1: Title (no more than ½ page to describe each Output, ¼ page per Product)
Output Description:
Identify the information needed by the program, region, state, or tribal partner(s) to address the problem(s) that have been identified. Include details and specific attributes, like spatial or temporal resolution, timing, cost limitations, complexity, etc., necessary to address these needs. Provide a description of how the Products build on each other to form the Output. Explain if products are used in the form they are delivered, do they rely on each other, or are they dependent on each other? Provide a clear description of how the partner will use the Output in actions and decisions, including specific regulatory drivers.
Output Format: *Describe in what form(s) the Output will be delivered, e.g., publication(s), EPA report,*

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